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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,534	09/16/2003	Hassan Mostafavi	VM7010733002	4278
23639	7590	04/13/2004	EXAMINER	
BINGHAM, MCCUTCHEN LLP THREE EMBARCADERO, SUITE 1800 SAN FRANCISCO, CA 94111-4067			DESTA, ELIAS	
			ART UNIT	PAPER NUMBER
			2857	

DATE MAILED: 04/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center"><b>Office Action Summary</b></p>	<b>Application No.</b> 10/664,534	<b>Applicant(s)</b> MOSTAFAVI, HASSAN	
	<b>Examiner</b> Elias Desta	<b>Art Unit</b> 2857	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 September 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 26-52 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 26-52 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## Detailed Action

### Claim objection

1. Claims 47-52 are objected to because of the following minor informalities:

➤ Claims 46 and 47 are referenced as claim 46; hence, the subsequent claims are numbered incorrectly. Claims should be numbered as 46-52 rather than 46-51. Correction is required.

### Claim rejection – 35 U.S.C. 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 26-52 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-28 of U.S. Patent No. 6,621,889. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reason:

In the instant application, claims 26-52 are directed to obtaining first and second data set that are representative of a physiological movement of a patent,

compare the data sets which provides a value that is useful for gating an application of radiation to a patient based on the result of the comparison; but does not specifically disclose that the radiation is administered for therapeutic purpose and during the administration of the radiation the evaluation is based on the periodicity of the physiological movement.

However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify or simplify U.S. Patent 6,621,889 to the instant claims because U.S. Patent 6,621,889 and the instant application include all the elements necessary to apply radiation to a patient, and U.S. Patent 6,621,889 further uses the radiation for therapeutic purpose. Even in the instant application would be used for a therapeutic value because the radiation is applied to a specific area of the patient body (as in gating).

As in the cyclic nature of the process, it is known in the art that the patient movement would be nonlinear due to the patient's physiological condition and position (see *Nevatia et al.*, page 3, model of body movement); hence the movement would be characterized in terms of periodicity because periodicity would be a better physical movement-characterizing model, and provides the user mathematical model to program the data collection and application of the radiation for better gating (It is also known in the art that radiation is an electromagnetic wave which has a

periodicity). In the instant application, this aspect of the claim is further refined in independent claim 44.

Further, the dependent claims in the instant case and U.S. Patent 6,621,889 use autocorrelation and absolute difference function to match the patterns of the two data sets obtained from the patient (see claims 28, 29, 47 and 48 from the instant case, and claims 2, 3, 5 and 6 from U.S. Patent No. 6,621,889). Both cases provide “a degree of match” to provide a better threshold comparison for administering the radiation (see claim 30 from the instant case, and claim 4 of U.S. Patent No. 6,621,889).

### **Conclusion**

4. Citation of pertinent prior art:

- Adams et al. (IEEE Article, ‘Correlator Compensation Requirements for Passive Time-Delay Estimation with Moving Source or Receivers’) teaches the effects of source or receiver motions on the output of a Cross-Correlator used to estimate the source time-day difference across the bass line.
- Pardis et al. (IEEE Article, ‘Detection of Periodic Signals in Brain Echo-Planar Functional Images’) teaches the use of autocorrelation values for constructing brain periodic activity images.

- Fee et al. (JNM, 'Automatic Sorting of Multiple Unit Neuronal Signals in the Presence of Anisotropic and Non-Gaussian Variability') teaches a method of recording multiple unit waveforms from nervous tissue into their single neuron constituents.
- Bankman et al. (U.S. PAP 2003/0004680) teaches the effect of noise on auto-correlation and neural waveform recognition.
- Pelc et al. (U.S. Patent 4,710,717) teaches method for fast scan CINE NMR imaging.
- Du (US. Patent 6,144,874) teaches respiratory gating method for MR imaging.
- Kanayama et al. (U.S. Patent 5,565,777) teaches method and apparatus for NMR imaging using an imaging scheme sensitive to in-homogeneity and scheme insensitive to in-homogeneity in a single imaging step.
- Heid (U.S. Patent 5,662,112) teaches method for time and location resolved display of functional brain activities of a patient.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elias Desta whose telephone number is (571)-272-2214. The examiner can normally be reached on M-Thu (8:30-7:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (571)-272-2216. The fax

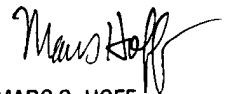
phone numbers for the organization where this application or proceeding is assigned are (703)-308-5841 for regular communications and After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-308-1782.

Elias Desta  
Examiner  
Art Unit 2857

-ed

March 31, 2004

  
MARC S. HOFF  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800